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EXAMINER	
MCCRACKEN, DANIEL	
ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/624,076	MANCEVSKI, VLADIMIR	
	Examiner	Art Unit	
	DANIEL C. MCCRACKEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *25-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *25-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Citation to the Specification will be in the following format: (S. # : ¶/L) where # denotes the page number and ¶/L denotes the paragraph number or line number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

Response to Arguments

Status of the Application

Finality of the office action dated 6/9/2008 is WITHDRAWN in light of Applicant's Request for Continued Examination ("RCE") of 10/15/2008. Applicants amendments to Claims 25 and 26 have been received and will be entered.

Claim Rejections – 35 U.S.C. §112

The rejection of Claim 26 under 35 U.S.C. 112, first paragraph is WIDRAWN in light of Applicant's amendment.

Claim Rejections – 35 U.S.C. §102

With respect to the rejection of Claims 25-29, 32-40 and 42-45 as being anticipated by Baldeschwieler in view of Iijima to show a state of fact, Applicants traversal is on the grounds that "Baldeschwieler et al. does not disclose a pore and they do not disclose a carbon nanotube coupled to the pore." (Remarks of 10/15/2008 at 2). The issue as framed here by Applicants is

whether the pore can be formed by a coating, as taught by Baldeschwieler. The Examiner respectfully submits that it is immaterial that the pore was formed by a coating or by removing material from the underlying substrate. All that was claimed is "at least one nano-sized pore disposed on the protrusion." Furthermore, the "disposed on" language suggests that forming a pore by depositing a layer is entirely permissible versus, for example, some other choice of words like "disposed in." (noting that a pore is really the absence of matter). The rejection is MAINTAINED.

Claim Rejections – 35 U.S.C. §103

With respect to the rejection of Claims 25-29 and 32-45 as obvious over Baldeschwieler in view of Iijima, Applicants appear to rely on their previous arguments. As such, no response beyond that given is believed to be necessary.

With respect to the rejection of Claims 25-45 as being obvious over Baldeschwieler and Iijima in view of Li, et al., Applicants traversal is on the grounds that neither Baldeschwieler, Iijima or Li teaches a pore fabricated at a specific location on the protrusion. (Remarks of 10/15/2008 at 4). The issue with this claim limitation is that reciting "a specific location" doesn't really limit the claim. The "specific location" is wherever the pore is. Furthermore, the plain language of the claim ("at least one nano-sized pore") suggests that multiple pores are contemplated. Calling one "specific" versus another does not distinguish, and if anything, supports the rejection as Li teaches multiple pores at "specific" locations with nanotubes growing out of them. *See* (Li at Fig. 4).

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The reference teaches each and every limitation of the rejected claims. The pinpoint citations are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found.

Claims 25-29, 32-40 and 42-45 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 96/38705 to Baldeschwieler, et al. (California Institute of Technology) in view of Iijima, et al., *Single-shell carbon nanotubes of 1-nm diameter of 1-nm diameter*, Nature 1993: 363: 603-605 (hereinafter "Iijima at __").[1]

With respect to Claims 25-29, Baldeschwieler discloses a device comprising a substrate, a protrusion, pore and carbon nanotube. *See generally* (Baldeschwieler "Figs 1-6"). Note also the passages at (Baldeschwieler 6: 1-18) (tip and substrate/"cantilever" of the same material, silicon), (Baldeschwieler 14:23 – 15:6), and (Baldeschwieler 30: 1-11) (discussing nanotubes). Figures 5-6 teach the "pore on the protrusion" limitation. As to the sharp/flat limitations of Claims 26-27, Baldeschwieler discloses sharpening. (Baldeschwieler 6: 11). By reciting nanotubes, Baldeschwieler reasonably suggests "flat" nanotubes. Note that Baldeschwieler suggests the nanotubes as disclosed by Iijima and Bethune. *See* (Baldeschwieler 35: 12-14). Iijima recites terminated nanotubes which appear to be "flat." (Iijima at 603, "Fig. 1b, caption"). As to Claims 32-40 and 42-43, Baldeschwieler discloses planar surfaces with the probe tip (i.e. nanotube) attached perpendicular to the substrate (i.e. "forming an angle"). *See* (Baldeschwieler,

"Figs. 1B, 5-6"). To the extent Claims 32-40 and 42-43 repeat limitations discussed previously (related to substrates, protrusions, nanotubes, etc.), the preceding discussion is relied upon. Note with respect to Claims 38-39, Iijima discloses nanotubes within the claimed range. *See e.g.* (Iijima "Fig. 2"). Finally, with respect to Claims 44-45, these claims are being interpreted as requiring nothing more than Claim 25. Furthermore any surface – by nature of it being "a surface" - can be "adapted" for attachment to another.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action. The references cited teach each and every limitation of the rejected claims. The pinpoint citations are in no way to be construed as limitations of the teachings of the reference, but rather illustrative of particular instances where the teachings may be found.

Claims 25-29, 32-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/38705 to Baldeschwieler, et al. (California Institute of Technology) in view of Iijima, et al., *Single-shell carbon nanotubes of 1-nm diameter of 1-nm diameter*, Nature 1993: 363: 603-605.

The preceding discussion of Baldeschwieler accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. With respect to Claims 26-27, notwithstanding the rejection as set forth in the anticipation rejection, to the extent Baldeschwieler and Iijima may not disclose the geometries claimed, Baldeschwieler provides a

[1] Multiple reference 35 U.S.C. 102 rejections are proper when extra references are cited to explain the meaning of a term or show a characteristic not disclosed in the reference is inherent. See MPEP 2131.01 *et seq*.

discussion of tip geometry its effect on image resolution. (Baldeschwieler 2: 15-23). Thus, utilizing a tapered (i.e. sharp) or flat tip is an obvious expedient to the skilled artisan, selection of the tip being based on the desired resolution of a particular surface. Finally, with respect to Claim 41, to the extent Baldeschwieler may not teach the aspect ratio (length/diameter), optimizing the length is for the end application (probe tip, field emitter, etc.) is an obvious expedient. There is nothing on the record to indicate that the present nanotubes differ from those of the prior art (see specification pgs. 14-16).

Claims 25-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/38705 to Baldeschwieler, et al. (California Institute of Technology) in view of Iijima, et al., *Single-shell carbon nanotubes of 1-nm diameter of 1-nm diameter*, Nature 1993: 363: 603-605 in view of Li, et al., *Large-Scale Synthesis of Aligned Carbon Nanotubes*, Science 1996; 274: 1701-1703 (hereinafter "Li at __").

The preceding discussion of Baldeschwieler accompanying the anticipation rejection *supra* is expressly incorporated herein by reference. With respect to Claims 30-31, to the extent Baldeschwieler may not disclose placing a catalyst in the pore, note the passage quoted below:

> In order to maximize production quality and the resolution of the images obtained by the scanning probes there is still a need for scanning probe tips *having regular, predictable shapes*, smaller radii of curvature and greater angle of taper than currently available.

(Baldeschwieler 2:31 – 3:3) (emphasis added). Thus, Baldeschwieler suggests a motivation or desirability for regular, predictable tips, which – as noted elsewhere – can be carbon nanotubes.

(Baldeschwieler 30: 7) ("nanotubes"). Li discloses carbon nanotubes grown from a catalyst particle (iron) deposited in pores. *See* (Li "entire document, Fig. 4"). Note that Li describes the ability to control the geometries of the carbon nanotubes via the in situ CVD technique. *See e.g.* (Li at 1703, col. 1). One would be motivated to utilize the pore/catalyst as taught by Li in the probe of Baldeschwieler for any number of reasons, for example the ability to grow uniform nanotubes. There is nothing on the record to indicate that the present nanotubes differ from those of the prior art (see specification pgs. 14-16).

With respect to newly added Claim 46, note that Li employs a sol-gel process that results in pores that have "material removed from them" as opposed to a pore formed by adding a layer. *See* (Li at 1702, col. 2). See comments above with respect to "specific location."

Conclusion

All amendments made in response to this Office Action must be accompanied by a pinpoint citation to the Specification (i.e. page and paragraph or line number) to indicate where Applicants are drawing their support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL C. MCCRACKEN whose telephone number is (571)272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel C. McCracken/
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Examiner, Art Unit 1793
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/Stuart Hendrickson/
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